

Research Article

Correlation between Hearing Impairment and Various Demographic Profile of School Going Children of Ghaziabad City

Dr. Saud Lateef Chishty¹, Dr. Sajad Hamid^{2*}, Dr. Esbah-i-lateef¹, Dr. Asef Wani¹, Dr. Mohd. Lateef Chisty¹, Dr. Shahnawaz Hamid³

¹Department of otorhinolaryngology, SKIMS Medical College, Bemina, Srinagar, Kashmir, India

²Department of Anatomy, SKIMS Medical College, Bemina, Srinagar, Kashmir, India

³Post-graduate student, SKIMS, Bemina, Srinagar, Kashmir, India

***Corresponding author**

Dr. Sajad Hamid

Email: drsajadk@rediffmail.com

Abstract: Over crowding, poor hygiene, socio-economic status, climate, lack of resources to avail medical facilities, poor medical awareness have their bearing on the incidence of hearing loss & there is relatively little evidence relating hearing loss to socio-economic status. The family of each hearing-impaired child has its own cultural, social, educational, and financial background, and its own special needs. The objective of our study was to explore the role and importance of socio-economic status and other demographic profiles among hearing impaired cases. The material for the present study were a representative sample constituting 1000 school children selected from various localities of Ghaziabad city within age group of 6-12 years. The children belonged to all the strata of society and children from both sexes were evaluated for hearing loss and its underlying etiological factors. Children were subjected to detailed ENT examination in our OPD. Statistical analysis indicated that maximum number of children with hearing loss were having below average socio-economic indices (60.22%) and least number of children were belonging to rich strata (8.60%). (31.18%) belonged to middle class strata. Also it was observed that 59.14% children were living in crowded localities of city & 40.86% were living in non-crowded/open locality which is again statistically significant ($p < 0.05$). Low socio-economic status appears to have an important part to play in pre-disposition of disease. In our study a total of 56 patients (60.22 %) belonged to the low-socio economic strata. Our study also allowed us to conclude that children residing in congested homes were more prone to hearing deficits (about 59.14 %).

Keywords: Hearing loss, Social factors, Economic factors.

INTRODUCTION

Adequate hearing acuity is of paramount importance and pre-requisite in the personality development of a child. Hearing impairment especially during early age has serious ill effects on child's psycholinguistic skills and school performance. A child struck with this malady is ex-communicative and absent minded. There is convincing evidence to suggest that for optimum development of speech and language, the auditory pathway must be stimulated from very early age to allow it and higher centres to mature properly. At present the research is directed towards early detection of deafness, a formidable task faced by Otorhinolaryngologists.

The repercussions of auditory deficits are more marked in children as the maximum development of their potentialities is affected. Most of the times mild and unilateral hearing losses remain undetected due to unawareness of child or parents as well as reluctance to express the same before teachers and society. Hearing

loss can be categorized into 3 main types as conductive, sensorineural and mixed hearing loss. Acquired conductive deafness can result from inflammation (otitis externa, acute suppurative otitis media, chronic suppurative otitis media, acute secretory otitis media or chronic secretory otitis media and these diseases are more seen in crowded areas. Most of the causes of hearing impairment in school age children are conductive in nature as indicated in many surveys (McCandless 1974) [1] and majority of them if recognized early might be amenable to simple medical or surgical intervention. On the other hand diseases like otitis media both suppurative and non-suppurative may lead to permanent damage which requires more lengthy and cumbersome treatment modalities if early detection is not made.

Psychogenic element per se or organic disease with psychogenic overlay should not be overlooked before reaching a final conclusion regarding possible etiologies in hearing impaired children. Over crowding, poor

hygiene, socio-economic status, climate, lack of resources to avail medical facilities, poor medical awareness has their bearing on the incidence of hearing loss.

Most earlier works indicate that five per cent of all school going children have hearing losses sufficient to warrant further evaluation. Ninety per cent of these losses are medically correctable if found early enough. But if special efforts are not made to identify these cases, they suffer from the detrimental effects of hearing loss. Countries like United States have experienced a decline of 90-95 % in the incidence of viral diseases which lead to hearing impairment, by institution of vaccination programmes. Bacterial meningitis continues to play an important etiological role in childhood hearing loss.

Hearing loss among school-going children in the developing world has been widely reported as a significant health problem [2-7]. Unfortunately, school-aged children are rarely screened for hearing loss during routine clinical examination and most school health authorities make no provision for audiometric assessment. The overwhelming burden of prevailing communicable and fatal diseases on the available/limited resources in most communities further diverts attention away from routine auditory screening.

Seeing the factors involved a proper assessment and evaluation of hearing of school going children is essential. The first part of the assessment must be spent in taking a brief relevant history about child's hearing. It is better to move quickly to clinical assessment since children become restless and anxious very quickly in unfamiliar surroundings. A history including family history, speech development, exposure to pathogens-story of prenatal, perinatal and postnatal- mishaps, trauma, academic and behavioral problems may be obtained later. Clinical assessment should include dioscopy, tuning fork tests and audiometric tests. A basic screening assessment of audiological function can be made with the help of tuning fork tests and the results must be correlated with otoscopic assessment, acoustic impedance and pure tone audiometry to understand the nature of pathology and to assess the degree of hearing loss.

Investigation of the cause of deafness is mandatory not only from the management point of view but also because parents want to know about the risk to subsequent children and also to future generation. Apart from this identification of pre-disposing factors can give a clue regarding appropriate measure that can be undertaken to minimize or obviate the possibility of exposure to these factors. Accurate identification of hearing threshold is particularly important for deciding the type of hearing aid.

After assessment of hearing loss in school children, necessary information, support and encouragement to parents as well as advice about remedial measures should be provided with a view to prevent or limit the disability. Parents are explained how best to use child's residual hearing and also informed about the importance of talking normally to the child rather than in an artificial and exaggerated manner. The factors that affect the eventual quality of speech and language development include date of diagnosis, use made of residual hearing, age of onset of hearing loss, family support and quality of language environment, individual differences and rehabilitative measures where necessary. There is a need for a team approach and there must be flexible interchange of ideas and information between parents, teachers and clinicians

MATERIALS AND METHODS

The material for the present study were a representative sample constituting 1000 school children selected from various localities of Ghaziabad city within age group of 6-12 years. The children belonged to all the strata of society and children from both sexes. They were evaluated for hearing loss and its underlying etiological factors.

Children having:

- Prior history of hearing loss and its underlying etiological intervention.
- Recent upper respiratory tract disease; and
- Children on medication for any chronic illness were excluded from the study.

Schools were visited after prior permission of the concerned headmasters through a requisition letter from the H.O.D., Department of E.N.T. Santosh Medical College and Hospitals, Ghaziabad. The concerned teachers as well as children were taken into confidence by explaining them the manifold benefits of the study in assessing the magnitude of the problem of hearing impairment and thereby suggesting appropriate measures for reduction in the size of the problem in school children for their benefit.

After obtaining history regarding present complaint with the assistance of the concerned teacher all the children were subjected to general physical examination and the examination of ear.

History

First General History was taken then detailed E.N.T. history was taken from the parents followed by detailed ENT examination in our OPD. Mobility of tympanic membrane was tested, which was also used to ascertain the presence of any fistula sign. Then nose and throat were examined in detail. Airway was examined for tonsils, palate and the posterior pharyngeal wall. Those children found to have hearing impairment as per history and/or examinations were the subjects for Lab. Investigations.

RESULTS

The present study was conducted in a representative sample of school children drawn from various schools in Ghaziabad city. The present sample constituted 1000 children within the age group of 6-12 years out of them 93 (9.3%) of children were found to have hearing impairment established by history and clinical examination and needed further evaluation in order to find out the underlying aetiologies of hearing impairment.

Audiological results from each child subjected to pure tone audiometry were classified into the following categories, Borderline 16-25 dB, 26-45 dB mild, 46-65 dB moderate, 66-85 dB severe, >86 dB profound, no measurable threshold (anacusis) for losses above 2000Hz (high freq. losses). Special attention was given to speech threshold freq. at 500, 1000, 2000 Hz. Impedance audiometry for assessing the middle ear

status and radiological studies (X-ray nasopharynx, mastoids, P.N.S. (Water’s view) was also done.

Socio-Economic Status of Children with Hearing Loss

Number of children with heavy loss of 16 dB or worse in each socio-economic group is shown in Table-1. It is observed that maximum number of children with hearing loss were having below average socio-economic indices (60.22%) & least number of children were belonging to rich strata (8.60%).31.18% belonged to middle class strata.

Living Conditions and Hearing Loss

The number of children in different localities with particular living conditions is shown in Table-2. It is observed that 59.14% children were living in crowded localities of city and 40.86% were living in non-crowded/ open locality which is again statistically significant ($p < 0.05$).

Table 1: Number of children with heavy loss of 16 dB or worse in each socio-economic group

Status	Number of Children	Percentage (%)
Upper class	8	8.60
Middle class	29	31.18
Lower class	56	60.22
Total	93	100%

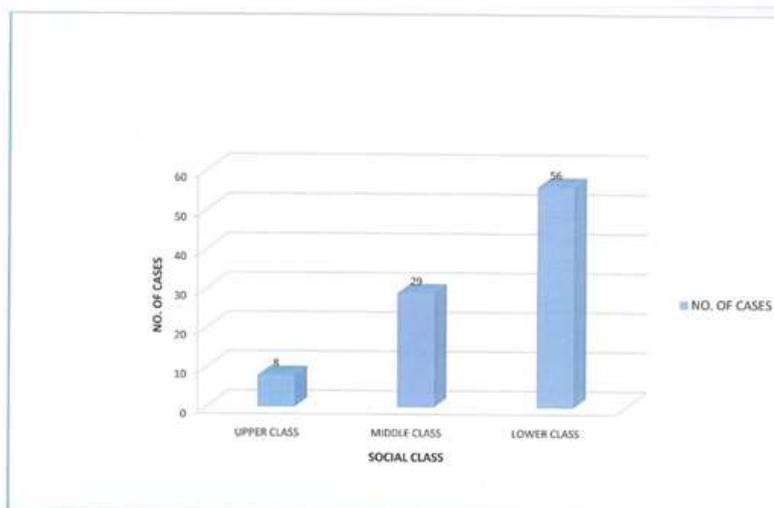


Fig. 1: Socio-economic Status of children with hearing Loss

Table 2: Living Conditions and Hearing Loss

Type of Locality	Number of Children	Percentage (%)
Crowded	55	59.14
Non-crowded/Open	38	40.86
Total	93	100%



Fig. 1: Living Conditions and hearing Loss

DISCUSSION

A total of 1000 school age children drawn from various schools in Ghaziabad city were screened. Out of these 93 children were having hearing impairment due to different causes. Overall incidence of hearing impairment in school age children was 9.3 % in our study.

These figures are in close agreement with earlier studies where it was observed that the incidence of hearing loss was 12.25 %.

Socioeconomic Status and Environmental Conditions

Low socio-economic status appears to have an important part to play in pre-disposition of disease. In our study a total of 56 patients (60.22 %) belonged to the low-socio economic strata. These findings are in agreement with survey conducted by Rajendra Kumar [8] who reports that 90 % of the cases of CSOM belonged to low socioeconomic strata. The same findings are substantiated in studies conducted by Tuli *et al.* [9]. Our study also allowed us to conclude that children residing in congested homes were more prone to hearing deficits (about 59.14 %).

CONCLUSION

The inferences drawn from the present study substantiates the view point of earlier workers. In the present study sample the incidence of hearing loss is 9.3 %. The maximum cases 60.22 % belonged to the low socio-economic strata.

Proper assessment and diagnosis of hearing loss in children at a very early age is important because an early diagnosis determines the efficacy of methods used for the correction of the hearing loss. The present study revealed that wax was the commonest cause of hearing impairment in school children followed by middle ear decrease, including CSOM, ASOI, SOM. This is due to a variety of reasons such as lack of optimum health services, low standard of living, lack of medical

knowledge and poor hygienic conditions. But at the same time it gives us the hope that improving the health services by promoting community medicine programmes and by employing pre-school and school hearing screening programmes the number of children affected by hearing loss will be reduced. Utilization of mass media to educate the parents and teachers about long term effects of ear disease should be done. This can be reinforced by deployment of health workers who can educate common masses about do's and don'ts regarding prevention of ear disease and also mitigate old notions of instillation of oil, etc. into the ear for relief of ear ache. There is a need for team approach and there should be interchange of information between parents, teachers and clinicians if ear disease is to be detected early.

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